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ARBOR & BIRD DAYS



ILLINOIS 1920



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ILLINOIS

Arbor and Bird Days

Friday, April Twenty-third
Friday, October Twenty-second

CIRCULAR NO. 146



FRANCIS G. BLAIR
Superintendent of Public Instruction

1920



"In the Great Out-of-Doors."

ARBOR DAY LETTER.

To Teachers:

The war put a great strain upon the minds and hearts of all people. In graphic speech and story, in pictures and songs, in the marching and counter-marching of troops along our streets to the stirring music of band and drum corps, in the farewells and home comings of friends and loved ones, it has touched deeply the imaginations and emotions of the nation. It is the spiritual map of the earth that has suffered the greatest shock and change from the World War.

And now, at its close, the human reactions from the nerve and soul tension of those terrible, those awful, those glorious days, are surprising and in many instances disquieting and alarming in their character. Sometimes after a life saving surgical operation the patient in the delirious state which follows the anesthetic may by his unreasoned action undo all that has been done. Here and there the reactions from the war have taken the form of a rising tide of unrest, a morbid tendency to complain, to quarrel with men and affairs, to resent the display of the very same authority which only a few months before they followed with willing enthusiasm. With others it expresses itself in excessive passion for amusement and dissipation. In the very attempt of local, State and national officers to control these tendencies there may at times be observable some of this excitable, nervous, excessive state of thought and action. It all results from certain causes and it will all yield to certain treatments. But the complete cure, the complete return to the normal state will require time. It can not be forced unduly. Some will find the antidote for this hang-over ailment in hard and concentrated work; others, in wholesome relaxation and play; still others, by losing themselves in the great out-of-doors, by falling in love again with flowers and trees and birds.

Nature's surest and sweetest restorer is nature. Herbs and trees have ever been the main source of healing and medicine. Untouched by the chemist they exert their greatest curative powers. The fagged brain, the aching nerves, the over-wrought system will find surcease and healing in the fragrance and color of flowers and trees and in the beauty of song and feather.

It is hoped that this edition of the Arbor and Bird Day Annual will do its part in calling the people, young and old, from the crowded places, from under the artificial lights and conditions out into those simple, primal, natural conditions which can only be found in the great out-of-doors.

Yours sincerely,

J. G. Blair
Superintendent.



SONG BIRD PAGEANT.

[F. G. BLAIR.]

Introductory Statement: With the aim of stimulating interest in and study of our song birds, I have spent a number of delightful hours in writing these lines. Prof. W. B. Olds prepared the theme of each bird's notes. Two of the songs printed, "The Meadow Lark" and "The Wood Thrush" are taken from his book, "Twenty-five Bird Songs for Children"—G. Schirmer, Publisher. The songs of the Blue Bird and English Sparrow are from a manuscript of his now ready for the press.

Mr. William Dodd Chenery of Springfield arranged the music for the finale.

PROLOGUE.

(May be spoken by man in garb of frontiersman.)

Ere yet the Red Man roamed these mighty plains
Or through these forests broke his narrow trail,
The song birds, God's first messengers to this
New World, ensouled the empty wilderness
With heaven-born melodies. The Blessed trees
Were here to give to all both food and shelter.
The buoyant air, the sunlight and the dark,
The glorious pageant of the season's change,
The flaming bush, the fragrant flowers, and all
Those myriad forms of life that creep or swarm—
All these were here and there and everywhere,
When first the lark with golden key of song
Unlocked the russet gates of morning light.
Along these streams and through these woods and o'er
The rolling prairie lands of Illinois
There came these sweet and joyous-throated birds,
A-building their nests and rearing their young
And making glad these vast and dismal wastes
With gleam of feather and with burst of song.
True pioneers were they; true voices theirs,
Of prophet crying in the wilderness,
"Prepare ye th' way for the children of men."
And now this Fairy, queen of all the birds
That sing in field and wood, with magic flute,
Will hither call them forth in grand review,
Endowing them with words of human speech
That they their love to human hearts may tell.



Meadow Lark.

*Queen's trumpeter blows flute. Song of Meadow Lark is heard.
Lark appears.*

Fairy Queen Speaks:

Come, glorious herald of the morn,
Thy breast all wet with dew,
Aurora's messenger, we give
All love and praise to you.

Meadow Lark:

Dear Fairy Queen, all praises given
For my brief roundelay
Belong to Him who lifts the sky
And sends the new born day.
When breaks the East in rosy dawn,
And light on swiftest wing
Sweeps through the golden gates ajar,
I sing, I sing, I sing.
Across the dew-bejeweled fields,
With joyful heart I fly,
Because beneath the tufted grass
My downy fledglings lie.
I am but part of that great life,
That throbs through all the earth—
The light and warmth of each new day
That gives to all new birth.

Fairy Queen:

Full modestly thou hast declared
Thy gracious noble part,

And ever at thy song we'll feel
 The sunrise in our heart.
 Therefore, thy place is in the East,
 The portal of the day;
 Where thou shalt ever wake to sing
 The dreary night away.

(Sergeant at Arms conducts to place in the east.)

(See Music on Page 39.)



Blue Bird.

Blows flute. (Song of Blue Bird heard as it appears.)

Fairy Queen:

Thou first glad song of summer,
 We welcome, welcome thee;
 Thou bring'st the breath of flowers
 With thy sweet melody.

Blue Bird:

No merit mine, O Fairy Queen,
 That I the flowers bring;
 They ride with me the rising tide,
 The rising tide of Spring.
 The urge of rain and sunshine moves
 Both buds and birds as one,—
 They bloom; I fly the great highway,
 Where leads the glorious sun.
 As o'er the fields, along the streams,
 My northern way I fly,
 Beneath I see sweet crocusses,
 Above I feel the sky.

Fairy Queen:

Modest thy speech as thy plumage,
 Thou harbinger of Spring;
 Brown as the earth thy dear breast is,
 Blue as the sky thy wing.
 A place in the south I'll give thee;
 There ever thy song would we hear
 A-calling our hearts to the springtime,
 Blest season of the year.
 (*Sergeant at Arms conducts to place in south.*)
 (*Song of Bluebird by Children dressed as Crocusses.*)
 (See Music on Page 40.)



Robin.

Blows flute. Song of Robin is heard. Robin appears.

Fairy Queen:

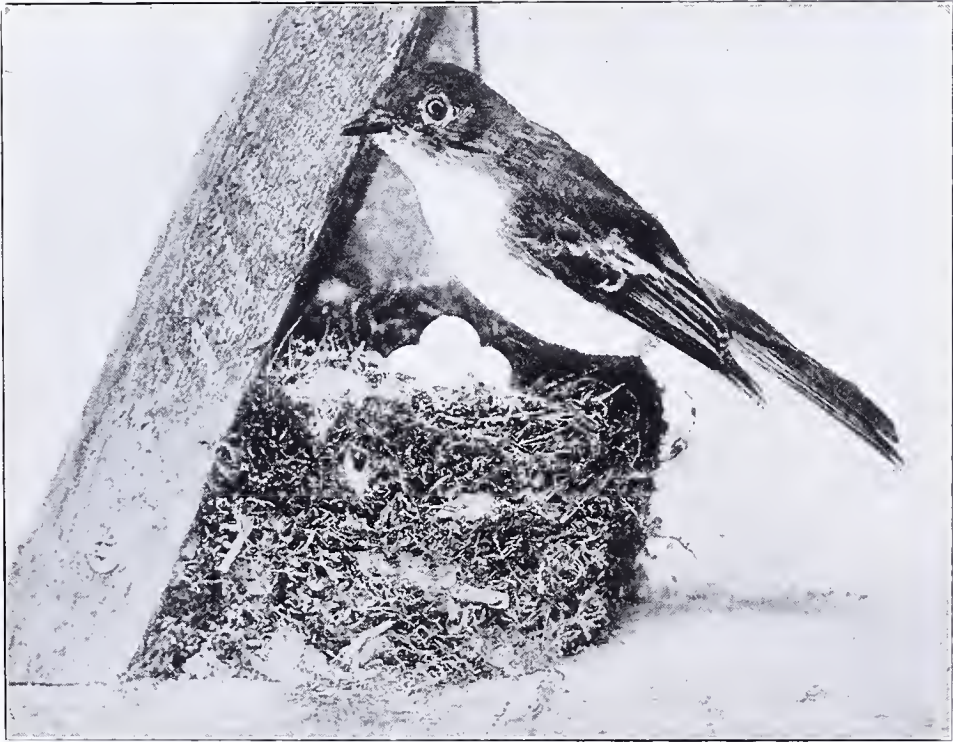
Dear Robin, thou soul of good humor,
Thou fountain of joy and good cheer;
I welcome, I welcome thee, Robin,
And bid thee and urge thee come near.

Robin:

Enough it were for me to live
And sing, and rear my young,
And call to thee, and call to thee,
The leafy trees among;
But trebled is my joy to know
That living, singing as I go,
The world a happier place may be
Because of me, because of me.

Fairy Queen:

Should'st thou be killed, dear Robin,
A plague on us would fall;
The world would lose its sunshine
Without thy cheery call.



Phoebe.

I therefore place thee by my side,
 Thou optimist supreme,
 And long as there shalt thou abide,
 The sun will ever beam.

(Robin stands on right of Queen.)

Blows flute. Phoebe's note is heard. Phoebe appears.

Fairy Queen:

O why, thou little mourner,
 This sad and plaintiff cry?
 Did one prove false, dear Phoebe,
 Or loved one fade and die?

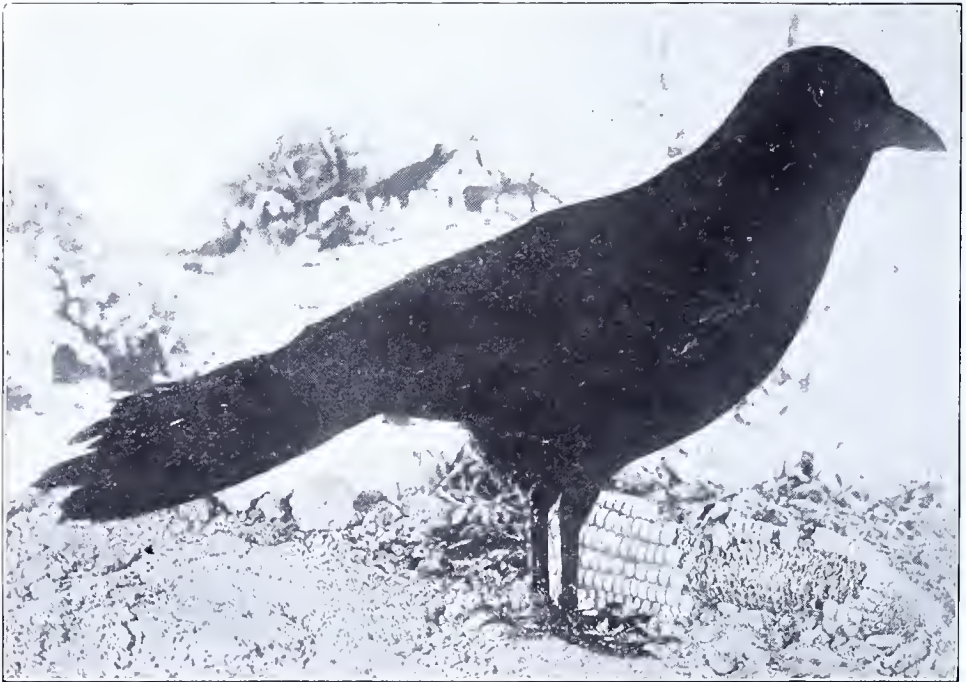
Phoebe:

No more can I my song explain
 Than thou thine eyes of blue;
 God gave to me my somber strain
 My coat of somber hue.

Fairy Queen:

Ah, well, my little weeping one,
 I'll place thee ever near
 To Robin's big and loving heart,
 Whose song thy heart will cheer.

(Takes place at Robin's side.)



Crow.

Three crows come flapping in—"Caw, caw." Confusion.

Fairy Queen:

Sergeant at arms! Out of my court
These rude intruders quick escort.

Sergeant:

Ye imps of outer darkness,
Ye young birds' blackest foes,
If ere through yonder gateway
Again you stick your nose,
On yonder limb a-hanging
I'll hang you three black crows.

(Exeunt.)

(Song by Chorus. "Three Black Crows Sat on a Limb.")



Brown Thrasher.

Blows flute. Song of Brown Thrasher is heard.

Brown Thrasher appears.

Fairy Queen:

Brown thou art, thou heaven-born singer,
And quaintly odd thy ways,
From out the fountain of thy being
Flow sweetest melodies.

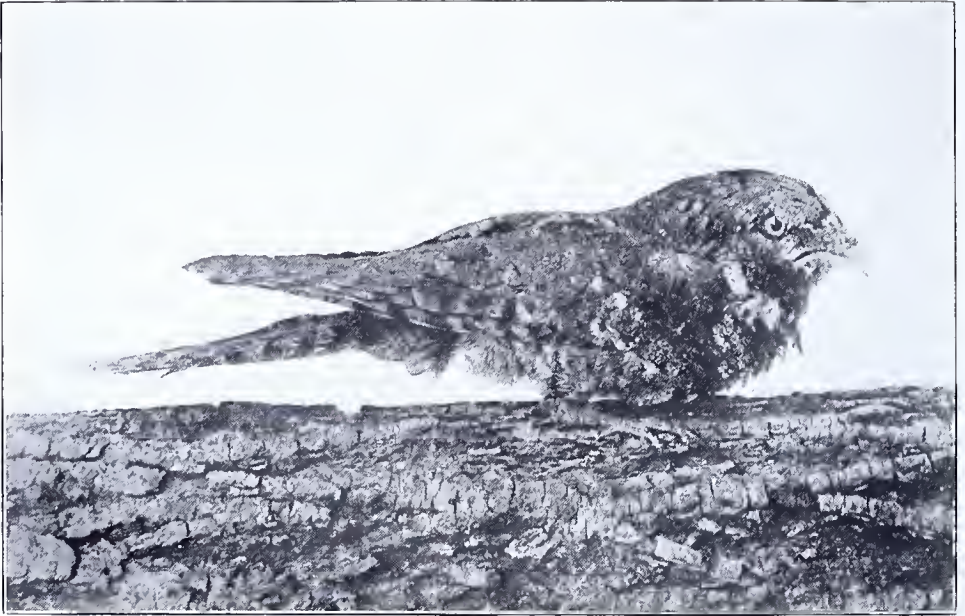
Brown Thrasher:

Though oft along the earth I run
And thrash my tail about,
And, searching food for little ones,
Go creeping in and out,

Yet when I sing, I sit aloft
 Beneath the bending blue;
 And there, and there alone I sing,
 For friend or lover true.

Fairy Queen:

Sweet charmer of the summer wood,
 Abide thou ever near us,
 And let thy song in joyous flood
 Throughout the season cheer us.
 (*Place on left of Queen.*)



Whippoorwill.

Blows flute. Whippoorwill's song is heard. Whippoorwill appears.

Fairy Queen:

Thou ghostly voice of ghostly hour,
 When shades of evening 'gin to lower
 And woodland folks are still,
 From out the silence of the night
 A wraith-like song our souls to fright
 Comes thy sad "whippoorwill."

Whippoorwill:

Dear Fairy Queen, on open green
 With these dear birds of light
 My voice to bring, my song to sing
 Would change the scene to night.
 Therefore I pray that now I may
 From thee and these depart.
 Though sad is my song the whole night long,
 I love a cheerful heart.

Fairy Queen:

Dear wail of souls departed,
 Sad spirit of the gloom,
 For those who're broken hearted
 I'll gladly give thee room.

(Sergeant at Arms conducts to obscure place.)

(Dance of Wood Nymphs.)



Cardinal.

Blows flute. Cardinal appears.

Fairy Queen:

Hail, tufted monarch of our world,
 Thou cardinal imperious,
 Thy song, a challenge or command,
 Is always sweetly serious.
 A flash of red against the snow,
 And now against the green,
 Thy noble form with pride aglow,
 Throughout the year is seen.

Cardinal:

Though proud am I, and haughty too,
 I am not void of good.
 Bencath my coat of red, red hue,
 There runs my warm, warm blood.
 I've a heart as true
 To the world and you
 As the gentler birds of the wood.
 Though I fear not cold,
 Nor warrior bold,
 I tenderly love my brood
 In their downy nest,
 'Neath the warm, warm breast
 Of a gentle motherhood.

Fairy Queen:

Thou prophet of the coming storm,
 Thou spirit fierce and bold,
 Alert at danger's first alarm,
 To guard our timid fold.
 I place thee at our outmost post,
 Courageous captain of our host.

(Is conducted to farthest point from Queen.)

Blows flute. Song of Bob-white is heard. Bob-white appears.

Fairy Queen:

When bends the wheat its golden yield,
 And harvest time is near,
 Across the waving, teeming field
 A clarion voice I hear.
 It is thy song, O Bob, Bob-white,
 That calls us forth again
 To garner while the sun shines bright
 The sheaves of ripened grain.
 Therefore, to thee, our earth-bound friend,
 A welcome warm I give
 To thee, who through the whole long year,
 Thy life with us doth live.



Bob-white.

Bob-white:

Though lowly near the ground I fly
 And lay and rear my young,
 I love the blue and open sky
 The bright and glowing sun.
 Through cold and heat in field and wood
 I live my whole life through,
 Though yearly slaughtered for man's food,
 I love the world and you.

Fairy Queen:

Thou eonstant friend, thou joyous boon,
In ehildhood's book and rhyme
I place thee 'neath the harvest moon
To eall the harvest time.

(May be stationed under an electric moon.)



Song Sparrow.

Blows flute. Song of Song Sparrow is heard. Song sparrow appears.

Fairy Queen:

I heard thee ere thou winged in sight
A-singing on thy way;
Thou sweet evangel of the light,
Sing on for us we pray.

Song Sparrow:

As life o'erflows in bud and rose,
So flows my song through me,
And joy it brings to him who sings,
The joy of life to be.

Fairy Queen:

O, sweet thy lay at break of day,
And sweeter at its close;
Abide thou near that I may hear
The song that from thee flows.

(Place close to Queen.)

Blows flute. Owl appears—Hooting, snapping and blinking eyes.

Fairy Queen:

Sergeant at Arms! An owl, an owl!
Out of our presence, this frightful fowl!

Sergeant:

O eyes that penetrate the dark
O voice that fills with fear,
Had you but missed old Noah's ark
We had not shed a tear.

(Owl turns his eyes towards Sergeant.)

Look out! Put on your dimmers,
You glaring, hooting Ford;
Or I'll put out your glimmers
With this, my trusty sword.

(Exeunt.)

(Song by Chorus.)



Cat Bird.

Blows flute. Cat Bird's call and song are heard. Cat Bird appears.

Fairy Queen:

Quaint paradox of cat and bird,
 Thou'rt welcome to thy kind,
 But let thy song, alone be heard
 And leave the cat behind.

Cat Bird:

A tragedy my life would prove
 Should thou my love disdain,
 For bird am I and birds I love,
 And bird shall I remain.
 My cat-like call I only make
 My enemies to warn,—
 And fondly wish for thy dear sake
 That from my voice 'twere torn.
 But the joy of my life and my living
 I pour into my song,
 A constant proof thus giving
 That I to thee belong.



Mourning Dove.

Fairy Queen:

Full well I feel thy earnest plea,
 Full well I know thy heart;
 And in our loved fraternity,
 A brother true thou art.

(*Any convenient position.*)

Blows flute. Song of Mourning Dove is heard. Mourning Dove appears.

Fairy Queen:

Sweet mourning voice, on every life
 Dark sorrow drops her tear;
 And in thy sweet funereal song
 Our own deep griefs we hear.

Mourning Dove:

Dear Fairy Queen, thy kindly words
 Bring solace to my heart,
 So few there be of men or birds,
 Who understand my part.
 As o'er the war-wrecked world I fly
 And see its sorrows cease,
 I sing my sad triumphant song,
 My solemn song of peace.

Fairy Queen:

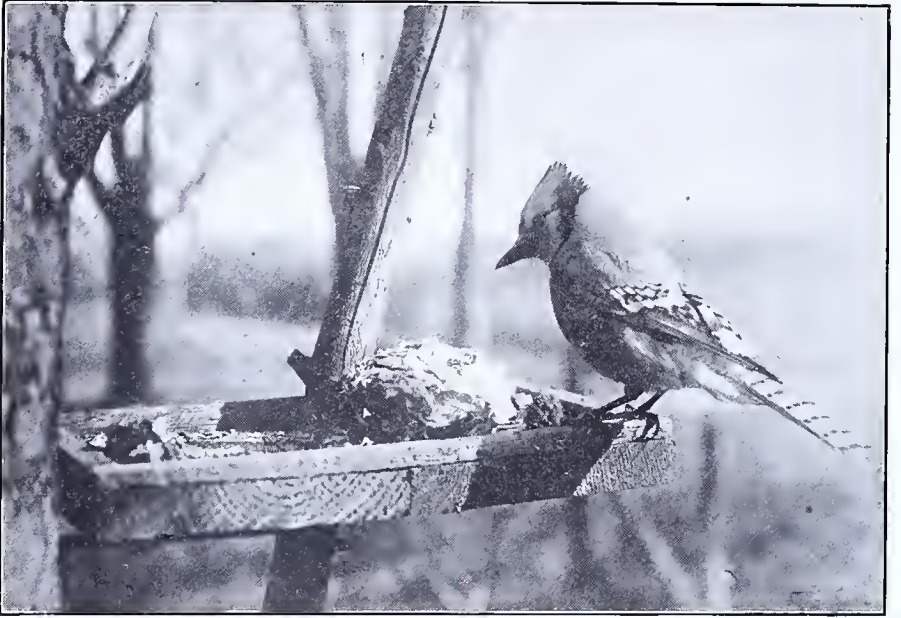
Fair words and true, thou heart of love!
 So 'bove the bust of Mars,
 I'll place for aye our peaceful dove
 To ward away all wars.

(*Some elevated position.*)

Blows flute. Blue Jay's song is heard. Blue Jay appears.

Fairy Queen:

Vain braggart full of fussiness,
 Bad blend of bird and elf,
 No compliment could I express
 Thou hast not paid thyself.
 The singer's song portrays his soul,
 In it the world may see
 How much of love his heart doth hold,
 How much humility.



Blue Jay.

Blue Jay:

Fair Queen of all our birdland hosts,
 I crave thy kind indulgence,
 Count not my words as empty boasts,
 My manners, vain effulgence.
 I am a brother to the crow
 His coarseness I inherit—
 The more of thy dear ways I know
 The more thy praise I'll merit.

Fairy Queen:

Forbearance and forgiveness are
 The laws of my domain:
 Obey them both in peace and war,
 If thou with us remain.

(Place next to the dove.)

Song by Chorus.

Blows flute. Red-headed Woodpecker is heard outside calling and pecking.

Fairy Queen:

Sergeant at Arms!
 There's a rap upon the door
 That we've often heard before;
 It's the coming of a dear old friend of ours.
 Though he has no winsome song
 Yet throughout the whole day long
 He's the jolliest little drummer in our bowers.

Sergeant at Arms:

I can see a bobbing head
 That is very, very red,
 And it's hammering on our good old chestnut tree.
 Don't your everlasting peek
 Make you weary in the neck?
 And prepare you for a jolly little spree?
 So just eut the work today
 And refresh your soul in play
 (As some wise old jolly duffer says)
 And come down with us to dine
 In our woodland's fairy shrine,
 Dear old shruiner with your nobby searlet fezz.

(Red-headed Woodpecker is ushered in and given a place.)

(Song of Red-headed Woodpecker by Chorus.)



Wood Thrush.

Blows flute. Song of Woodthrush is heard. Woodthrush appears.

Fairy Queen:

Elusive spirit of the wood,
 Thou eloistered soul of song,
 Sweet modesty of maidenhood,
 We've wished thy presenee long.

Woodthrush:

Dear Fairy Queen, thy magic power
 Alone bath witehed me here—
 From silent wood, from leaf-looked bower—
 All trembling to appear.

The open glare of midday sun,
 The noise of shop and street,
 Instinctively I ever shun
 For my secure retreat.

Fairy Queen:

Dear quaker maid of quiet mood
 I love thy liquid note,
 As seated on the marge of wood
 I feel they song afloat.
 Pray take thy place these trees among
 So at the close of day
 Within thy limpid fount of song
 My cares thou'lt wash away.

(Place among the trees.)

Blows flute. Note of Bobolink is heard. Bobolink appears.

Fairy Queen:

Pied Piper of our birdland ways—
 Black vest and mottled coat—
 Thou charm'st our children from their homes
 With magic flute-like note.

(See Music on Page 42.)



Bobolink.

Bobolink:

When berries redden in the sun,
And fruits begin to sweet,
I call the children every one
Along my 'chanted street.

Fairy Queen:

Sweet idol of our book and rhyme,
We love thy magic art,
And give thee place throughout all time
In loving childhood's heart.

(Any convenient place.)

(Folk Dance of fruits and flowers may be used here.)

Blows flute. Song of Jenny Wren is heard. Jenny Wren appears.

Fairy Queen:

Thou mite of energy and song,
How couldst so long delay?
Thou model of domestic bliss,
I welcome thee today.



Jenny Wren.

Jenny Wren:

My little life I choose to live
The busy folk among;
To cheer them in their daily toil
My sweetest song is sung.

Fairy Queen:

My preeious bunch of work and cheer,
I'll keep thee elose to me
To spur my languid faeulties,
My slothful industry.

(On elevated place at one side and back of throne.)

Blows flute. English Sparrows come hopping, chirruping in.

Fairy Queen:

English sparrows! Spoilers of earth
For noble birds of noble birth!
Out, out of our presence! Turn in the call,
Let the curse of the Irish upon them fall.

Patrol gong sounds outside.

Irish policeman enters.



English Sparrow.

Speaks:

Ye devilish devils of devilment
Who put the *imp* in impudent?

Ye devilish English sparrows.
Who use our houses and pay no rent?
Who drive out our birds of decent descent?

Ye dirty English sparrows.
Who through yon window are going to be sent
Like a band of robbers "ellitybent"?

Ye thievish English sparrows.

(Drives them out with vigor.)

(Song of English Sparrows by Chorus.)

(See Music on Page 43.)



Red-eyed Vireo.

*Blows flute. Song of Red-eyed Vireo is heard. Appears.
Fairy Queen:*

Sweet minstrel fay of woodland cabaret,
Thy songs and meals entwining,
Dost thou in praise or jest thy glad notes raise
Before and after dining?

Red-eyed Vireo:

With bread and wine, each day, on tree and vine
My courses rich are spread
By yon same sun whose brush, the flaming one,
Hath touched mine eyes with red.
I eat, I sing my part, on foot or wing,
And lift my praise for all
To Heaven's goal from out whose fruitful bowl
Our foods like manna fall.



Rosebreasted Grosbeak.

Fairy Queen:

Our grateful priest, be thou at every feast,—
Teach us our praise to sing;
To lift our eyes in thanks unto the skies,
From whence our blessings spring.

(Any convenient position.)

*Blows flute. Song of Rosebreasted Grosbeak is heard.
Rosebreasted Grosbeak appears.*

Fairy Queen:

Thou knight with rose upon thy shield
And courage in thy heart,
Com'st thou to lead our song crusade?
To save our blessed art?

Rosebreasted Grosbeak:

Right proud am I at thy fair words,
O queen of our domain,
Right gladly will I fight and die
Thy glory to maintain.



Oriole.

Fairy Queen:

Though Robin hath a redder breast,
 A song of robust cheer,
 He grants thy rose the loveliest,
 Thy song more sweet and clear;
 So on thy valor as a Knight
 I charge thee with this grail
 That holds the mystery of song;
 See thou it shall not fail.

(Immediately at left of Queen.)

Blows flute. Oriole's song is heard. Oriole appears.

Fairy Queen:

Hither comes our golden fleeee,
 Our Oriole, the fair;
 Swinging mystery of the trees,
 In castles of the air.

Oriole:

Thy magie flute my presenee brings
 To join this blessed throng.
 I love the touch of friendly wings,
 The minstrelsy of song,
 I love in breath of southern breeze,
 In flash of summer flowers,
 In hammoek swung from airy trees,
 To spend the witching hours.

Fairy Queen:

Sweet mystie of our woodland,
 Thy home shall ever be
 A-swinging from the topmost bough
 Of this our family tree.

(May take elevated place under any tree.)

Blows flute. Chanticleer's crow is heard. Appears.

Fairy Queen:

Sergeant at Arms!
 This barnyard king hath lost his way,
 And from his harem gone astray.
 They may o'er sleep the break of day
 Should he with us too long delay.

Sergeant:

Why carry a eomb so big and so red?
 For ehasing the eooties out of your head?
 Your hens you are thinking are praying for you,
 But when you return they'll be laying for you.
 Don't swell yourself up in that grand, eeky pose,
 Or I'll be hanging you up with those other bad crows.
 And now step lively you old, rusty rooster,
 Or with my good boot I'll give you a booster.



Canary.

*Blows flute. Song of Canary Bird is heard. Child appears carrying
Canary in cage.*

Fairy Queen:

Dear prisoned throat of sweetest note,
We miss thee from our trees;
How can'st thou sing with folded wing
Untouched by freedom's breeze?
How can'st thy breast in loveliness
With sweetest music swell
And thou confined these wires behind
Imprisoned in a cell?

Canary:

O, gentle Queen, thy tender vein
 Hath deeply touched my heart,
 But wired cage can ne'er restrain
 A lover's dearest art.
 I never knew the wild free life
 Thy joyous words proclaim;
 I never felt the storm and strife
 Of woodland's wild domain,
 But dearest Queen, thy urgent plea
 Stirs in my soul a fear—
 I am unfit for life so free,
 I must live on in here.

Fairy Queen:

O, sweetest prisoner of the wild,
 Thy fears I will respect,
 And leave thee with this kindly child
 Who will thy song protect.

(Any convenient place.)



Mocking bird.

Blows flute. (Some strains of Mockingbird's song are heard.)

Mockingbird appears.

Fairy Queen:

Thou south born mimic of our woods,
Thou medley of sweet song,
We welcome thee most heartily,
Thy tunes to us belong.

Mockingbird:

Dear brothers of our rhythmic guild,
Dear Queen of melody,
I bring thee greetings from the South,
Sweet land of poesy.
God hath my voice a record made
For every pulse of song;
I gather here, I gather there,
All songs to me belong.

Fairy Queen:

God filled thy heart so full of love
One tongue could not express,
So gave he thee a thousand tongues
To sing earth's loveliness.
And now thou heaven-born singer,
A crown to thee I give;
Though all our songs should perish,
In thee they all would live.

(Takes place in center of stage. All gather around.)

(Final Chorus of Song Birds.)

(See Music on Page 34.)

SUGGESTIONS FOR PREPARING AND STAGING THE PAGEANT.

When staged indoors there should be much foliage, natural or artificial. The Queen should be a young woman who can commit and speak her lines well. The Sergeant at Arms should be a boy, dressed, perhaps, as a Boy Scout. All of the song birds except the Jay bird, Cardinal and Grosbeak should be represented by girls from the upper grades or high school. They should be dressed in paper costumes to show characteristic colors of birds. (Denison Paper House, Randolph St. near State St., Chicago.) Only the owls, crows, English sparrows, red-headed wood-pecker and rooster should show beaks. One or more persons should learn to whistle the songs of the birds. A placard should announce the bird as it's song is heard. Songs of most of the birds are on Victrola records. These should be used before curtain is raised and at certain other times to help create the proper atmosphere. Any appropriate song or folk dance for children may be used instead of those mentioned. All children of the district should study the song birds represented in this pageant before it is given.

Its real object is to arouse interest and promote study of these birds. The owl should have glass paper weights for eyes. While directions are given for positions on stage, the matter is not important. To suggest the wilderness background a man dressed as a frontiersman may read or recite the prologue.

The cuts of the English Sparrow, Brown Thrasher, Mourning Dove, Mocking-Bird, Bobolink, Song Sparrow, Wood Thrush, Crow, Canary, Rose-breasted Grosbeak, Cat-Bird, Blue-bird, Bob White, Whippor-will, Phoebe, Robin, Red-Eyed Virio, and Jenny Wren, were made from the colored pictures of these birds published by A. W. Mumford, 536 S. Clark St., Chicago. In making costumes, it would be wise to secure these colored pictures.

Finale

Andantino *A Herald* *Over from duet Verdi's "Ai nostri monti" — Il Trovatore*

Lo! in the west now the sun is dy-ing,

Andantino

Soon to their nests must the birds be fly-ing, Ah! Queen of Fair-ies, o'er their de-part-ing,

The Queen (with exaltation)

Bid them u-nite in a hymn of God's praise An-gels of glo-ry

8va

first sang the sto-ry, Of our Cre-a-tor's un-bound-ed

8va

The Queen

love. All look upward in adoration Come, all ye birds of fair, er-er re-

- joic-ing, High un-to heav-en now grate-ful-ly sing. All thy sweet faith and love, joy-ous-ly

voic-ing, Let field and for-est with mel-o-dy ring, Sun-shine and flow-ers full
8va. - - - - -

all thy sweet bow-ers, Mak-ing thy homes er-er dear to thy heart.
8va. - - - - -

The Queen

Ah! Go to your nests where your down-y ones rest.

Chorus of Birds

Home to our wood-land, now we're re-turn-ing, Home to our nests where our down-y ones rest.

The Queen

Ah! Wish-ing I could with thy pres-ence be bless'd.

Chorus

Queen of our hearts for you will be yearn-ing, Wish-ing we could with thy pres-ence be bless'd. Fare-

The Queen

Fare-well, fare-well, fare-well. A song of

-well, Fare-well, Then fare-thee well. A song of praise,

praise, of praise, Then fare thee well, then fare thee well.

A song of praise, Then fare thee well, then fare thee well.

Glory to God --- Arr. from Mendelssohn's "Elijah"

Queen

Queen and Chorus

Queen

"Glo-ry to God" the an-gels sang, "Glo-ry to God" the wide world rang, "Glo-ry to

"Glo-ry to God" the wide world rang.

Allegro Maestoso

Trumpets

Chorus

Queen

Queen and Chorus

God; Glo-ry to God, Glo-ry to God, Glo-ry to God. Glo-ry to

God, "Glo-ry to God" the an-gels sang, "Glo-ry to God" the wide world
 God, "Glo-ry to God" the an-gels sang, "Glo-ry to God" the wide world

rang, the an-gels sang, the wide world rang, "Glo-ry to God" the an-gels
 rang, the an-gels sang, the wide world rang, "Glo-ry to God" the an-gels

sang, "On earth be peace, good will to men, men, men,
 sang, "On earth be peace, good will to men, men, men,

Meadowlark

(♩ : 116)
 Out where the flow - ers grow, Smil - ing in the morn - ing sun,
 quite a little faster
 Up where the breez-es blow. Fra-grant and sweet, "The but-ter-cups are blos-som-ing,
 quite a little faster
 The feath-er-folk are has-ten-ing," So from his ce-dar post
 a tempo
 a tempo
 rit.
 rit.
 Sings the mer-ry Meadow-lark, Van - guard of summer's host, Spring-time to greet.
 rit.

From 26395 • to • may be whistled, if preferred.

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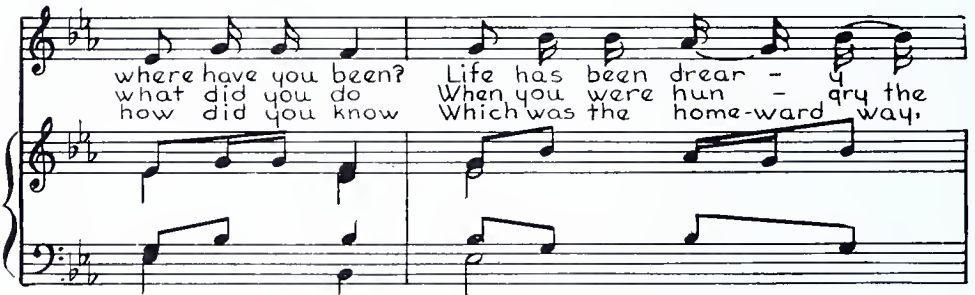
BLUE BIRD

Themes  *From
Second Book of Bird Songs
for Children
by
W.B. Olds*

$\text{♩} = 76$ *mf* *Fairy Queen*

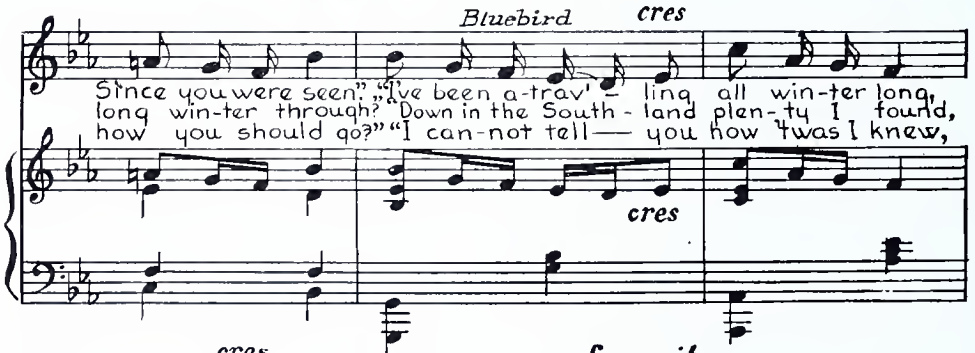


1 "Frail lit - tle wan-der-er,
2 "Frail lit - tle wan-der-er,
3 "Frail lit - tle wan-der-er,



where have you been? Life has been drear -
what did you do When you were hun - gry the
how did you know Which was the home-ward way.

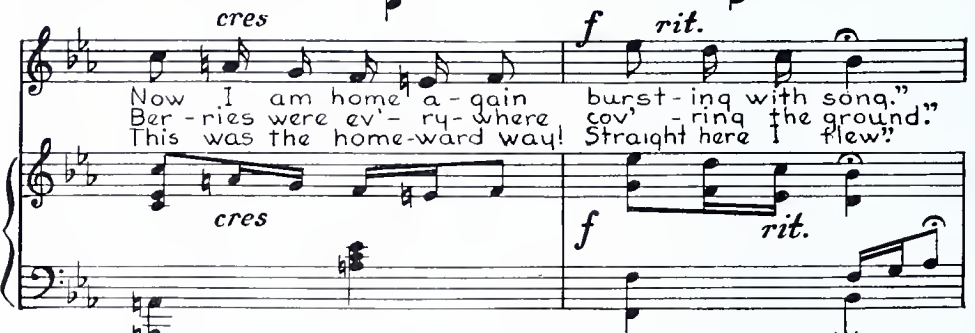
Bluebird *cres*



Since you were seen? "I've been a-trav' - ling all win-ter long,
long win-ter through? Down in the South - land plen - ty I found,
how you should go? "I can-not tell - you how I knew,

cres

cres *f* *rit.*



Now I am home a - gain burst - ing with song."
Ber - ries were ev - ry - where cov - ring the ground."
This was the home-ward way! Straight here I flew!"

cres *f* *rit.*

Used by permission of the publisher, G. Schirmer, New York.

Chorus

p quietly and smoothly

Dear lit - tle bird with the wings of blue,

Breast that is tinged with the sun-set hue. We

hear your song and we wel-come you, so

cheer - y, so cheer y!

Wood Thrush

Quietly (♩. 76)
 In the for est deep and shad-ow-y Not a
 sound is heard save a war bling bird And the
 mes-sage that he sings me. "Be of good
 cheer! Nev-er a care en-ter-eth here!"

cresc. *dim.*

ENGLISH SPARROW

*From
Second Book of Bird Songs
for Children by
W. B. Olds.*

$\text{♩} = 104$ With energy

He's a

ban-dit, a bul-ly and a thief, And his ways are past be-lief, Tho' we'd

glad-ly be-friend him, Bold-ly de-fend him When he comes to grief, If per-

haps he'd learn to sing Or would stop his quar-rel-ling, But he

Used by permission of the publisher, G. Schirmer, New York.

can-not sing a song, And he quar-rels all day long, And we wish he'd re-mained in

Eng-land. *f* "Cheep! Cheep! Cheep! Cheep!" O yes we know you are cheap! On-ly

when you're in the street is your hap-pi-ness com-plete, And we wish you'd re-mained in

Eng-land. *f* We're a-

mf
 fraid he has come to stoy. He's in-creas-ing ev-ery day, Tho' we
mp

loud-ly de-cry him, Stew him or fry him, Still he holds his sway We have

cres
 seen him steal our fruit And nip the ten-der shoot; The Bi-o-

log-i-cal Sur-vey Says he drives the birds away, And he must be ex-ter-mi-na-ted

f

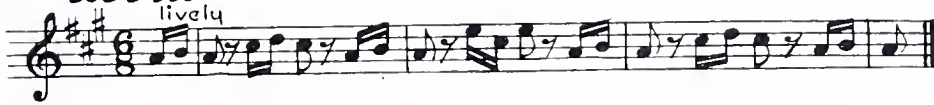
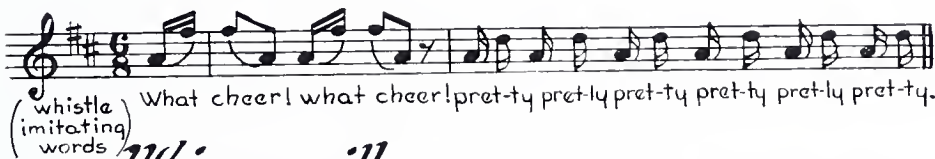
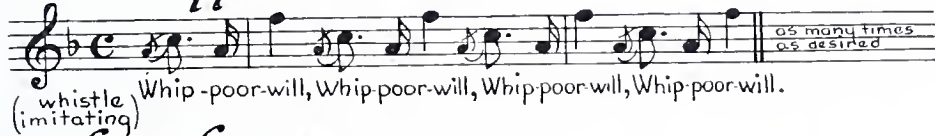
"Cheep! cheep! cheep! cheep!" O yes we know you are cheap! On-ly

when you're in the street Is your hap-pi-ness com-plete And we

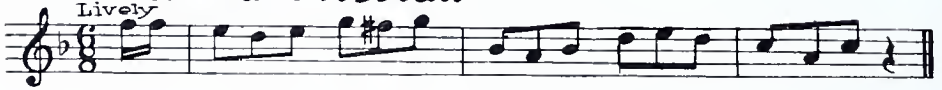
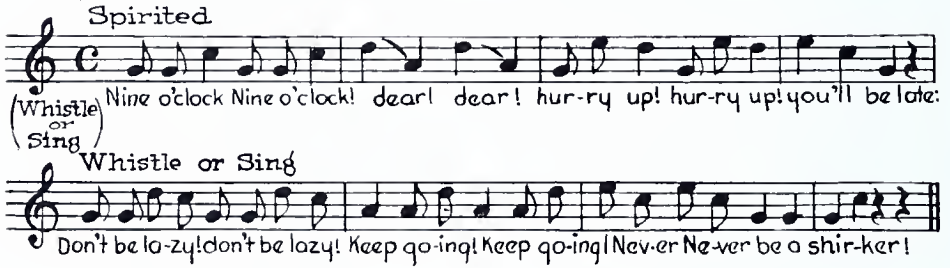
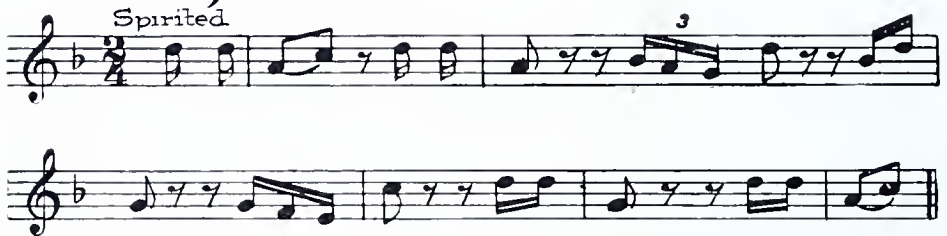
wish you'd re-mained in Eng-land.

ff

BIRD THEMES BY W. B. OLDS.

Bluebird*Robin**Wood-Pewee**Bob White**Cardinal**Whippoorwill**Song Sparrow**Mourning Dove**Catbird**Wood Thrush**Baltimore Oriole*

BIRD THEMES BY W. B. OLDS.

Rose-breasted Grosbeak*Brown Thrasher**Jenny Wren**Red eyed Vireo**Blue Jay**Bobolink**Meadowlark*

FORESTS.

INTRODUCTION.

The valuable material and cuts on various phases of forestry which appear in this Arbor and Bird Day circular have been written or secured by Mr. R. B. Miller, State Forester.

The articles on The Uses of Forests for "Recreation," "Prevention of Erosion," "As a Place for Study," on "Forest Fires," on "Wood Destroying Fungi," on "The Structure of Wood," and "Directions for Setting out Trees on School Grounds" were prepared by Mr. Miller.

Mr. Miller also selected the poems entitled, "Planting a Tree," "Shade," "The Tree Planter," "Who Plants a Tree," "What do We Plant?" and "Prospectin'."

I believe that this is an interesting and valuable collection of material and recommend that it be used by teachers and pupils in class study.

F. G. BLAIR.

The Uses of the Forest.

(Recreation.)

The first view shows one of the most famous lakes in the Adirondaek mountains of New York, as viewed from the top of a high peak. It is beautiful in its setting of firs, the tall evergreen trees, and the white-barked birches. Into this region every summer thousands of tourists come to escape the heat of the city and to spend a couple of weeks or more fishing in its lakes and streams. The state of New York has set aside in some of the most picturesque parts of the Adirondaeks, forest parks for the pleasure and health of the people. For in some places there are camps for invalids, especially those afflicted with tuberculosis or consumption. The sweet pure air of the forests, laden with the fragrance of the pines and the balsam is as a breath of healing to these sufferers and many are greatly benefitted by a few month's of open-air life in tents or shelters built for convalescents. Their jaded appetites and exhausted nerves soon yield to such treatment and here, in the peace and quietude of the forest, they may find rest and healing. Surely the state is wise in having such forest parks set aside for the health and pleasure of her people.



Photo by Thomas Stang.

View in Ne-has-ane Park, Adirondacks, New York.

The Prevention of Erosion.

(Washing of the soil and "Gullying.")

You remember the story of the man in the Bible "who built his house upon the sand." The house shown in the illustration is not exactly built upon the sand but it is in a most precarious situation, after all, because in time it may tumble down into the deep gully or ravine shown in the picture.



Photo by Thomas Stang.
Yale Forestry Camp in the Adirondacks of New York, May, 1919.



Photo by Illinois State Soil Survey.
A deep "gully" in Mason County, Illinois, which is advancing and likely to undermine the buildings.

The cause of such a gully is this. The grass and shrubs which once helped hold the soil have been washed away or undermined by the removal of softer layers underneath, so that there is a constant caving in of the top layers, just as there is in an old gravel pit.

Through the action of the rain, since there is nothing to soak up the rainfall, an immense torrent rushes down the "gully" in wet weather which carries much sediment. As you can see, the upper end of the gully is eating back into the land above and the house is in danger. In a few years it may even fall into this immense ravine, since the advance may be several feet per year. The roots of plants, shrubs and trees are the best means of holding soil of this kind, but even such growth now does not seem to be able to stop the advance. If the roots went down deep enough, they might hold the soil and stop it, to a certain extent. Such land, being worth little for farm crops, may be finally abandoned and the inhabitants leave the country because they are not able to make a living from the soil.

The forester believes that a growth of trees, with deep roots, is the best means of holding soil liable to wash away in this manner, and that where there were such forests, they *should never have been removed*. The leaves and decayed branches of the trees under the shade of the trees, which the forester calls the "forest floor," will soak up and hold a great deal of water during hard rains, so that instead of running off rapidly and making gullies it is stored up, appearing later in the form of streams and springs. This is the reason that in very dry countries, where crops must be raised by supplying water from ditches (called irrigation), as in California and some of the western states, they are very careful to have forests at the upper sources of the streams so as to hold the moisture and keep the stream steady, avoiding sudden floods at rainy times and drying up in the summer. So far as we know, nothing can do this as well as a forest, and these forests, from their importance upon the water supply of a country, are called "protection forests."

We contend then, that in Illinois, where the land is too steep for farming, that it should be kept in forest or put back into forest as rapidly as possible. The forest should not be allowed to burn off, since this destroys the forest floor and injures the soil; nor should too many cattle, horses or goats be allowed to graze in it, eating into the earth its grass and making a dust by trampling the soil. Both of these causes, fires and too much grazing, may cause the formation of gullies, which, as our illustration shows, are very hard to stop and make thousands of acres of land worthless.

As a Place for Study.

(Forestry in Agricultural High Schools.)

The importance of forestry for agricultural High School students has been recognized for some years by the United States Forest Service and lessons in forestry have been introduced in the schools in Illinois. The subject of forestry and trees is one which lends itself very easily to adaptation in classes in botany, nature study, geography and physiography. Mr. R. C. Hall, Forest Assistant, and Edwin Jackson, Forest Agent of the U. S. Forest Service, several years ago gave courses in



Photo by Forest Service, Washington, D. C.

Boys of the Baltimore County Agricultural High School, raising flag at forestry camp, near Parkton, Maryland.



Photo by U. S. Forest Service, Washington, D. C.

Boys fording stream on forestry field trip. Devil's Backbone Camp, Baltimore County Agricultural High School, near Parkton, Maryland.

forestry to the boys of the Baltimore County Agricultural High School, Baltimore, Maryland, even having a forestry camp for them lasting for ten days. During this time work was given in studying the trees, writing short descriptions of a forest, estimating timber in woodlots, and studying the characteristics of forest trees. Our two photographs, loaned by the Forest Service, show some of these boys and their camp and shows them on one of their "hikes" on a forestry field trip. Not many High Schools have gone so far as to have a regular forestry camp for High School students, preferring to introduce lessons in forestry in connection with other subjects but the photographs show how much the boys are interested in it and how delightful such a camping trip must have been, under the guidance of men who had been practical foresters.

Enemies of the Forest.

(Forest Fires.)

One of the worst of these is fire. Look at the next picture and see the devastation that the fire fiend has wrought, the beauty of the picture replaced by a blackened waste, like some of the forests of Europe swept



Photo by Thomas Stang.

Scene in Adirondacks after a fire swept over the Forest.

by shell fire. Last spring I looked from one of these peaks and could see where a fire which covered 25,000 acres had swept the forests—a forest as beautiful to look upon as you saw in the first picture. Streams have disappeared and it is hard to find water to drink. Only blackened stubs of great pine and spruce remain, with occasional patches of green timber which the great fire missed because it might have been too wet

to burn. Scattered patches of poplar and grey birch may be seen, with fire cherry, which are the first trees to appear after a "burn." Little pines and spruces may be scattered underneath these "pioneer trees" as we call them, but it will be a hundred years or more before we get a forest of spruce or fir or pine, because the soil is burned away and it will take a generation to enrich it again enough to bring back the former growth.

And this fire started from someone being careless with one small match. Perhaps some tourist on the train threw away a cigar and it lighted in the dry litter, called "duff," smouldered a while and the wind finally fanned it into a flame. Or some lumber-jack or cruiser, a man used to the woods, carelessly threw out his pipe ashes or threw away a cigarette without stamping it out. Perhaps a careless fisherman, along some stream had his noonday lunch and left his campfire without throwing a few bucketfuls of water upon it, as every good woodsman should do.

The forest ranger, from his lookout tower, using field glasses, saw a little smoke arising from this spot, which gradually grew larger, and was the start of a great forest fire. This swept onward by the wind, feeding on the brush left by lumbering, until it might require hundreds of men, fighting until exhausted, to put it out, driving it between two brooks or streams before it lost headway. Perhaps it traveled in the tops of the trees, since the majority of the trees are pine or spruce and the tops, full of resin and gum easily take fire. This, then becomes the dreaded "crown fire," very hard to stop and sweeping over hundreds of acres of green forest.

As the evening becomes cool and the dew falls, the fire abates but the men must not relax their fighting, in fact they must work harder than ever while things are in their favor. They telephone to lumber camps and to towns for assistance, get axes, shovels, and green brush to make one last stand, perhaps digging a trench or "fire line" which checks the flames unless they jump this barrier, as they often do. They will have a party to cook and carry food and drink, because fire fighting is very exhausting work and men can eat every three hours. Finally it is reported "out," but watchers are left along the blazing line to put out stumps and logs lest the wind come up in the night and the fire spreads again. This watchfulness must be kept up for several days until rains come, the ground is soaked and the danger is over.

And all of this was caused by one little match. With it that careless smoker or camper burned your house and mine perhaps; destroyed a lot of newspapers, because the spruce is the main tree from which paper is made, and placed in danger the lives of those patients in the tents. He destroyed a lot of pleasure for the tourists, because the streams will become dried up and parched, now that they do not have the mulch of the forest to store up the water and keep them constant. He was really an enemy of the state because he destroyed what it took Nature many years to build and many more years to restore to its former beauty and usefulness. Remember, then, when you are in the woods, or go camping, to be careful about matches and fire lest you destroy one of the best gifts we have—THE FOREST.

Wood-Destroying Fungi.

As a result of a fire-scar on the side of a tree or some other injury, cracks formed and in the moisture in these cracks a seed or "spore" of a fungus germinated and grew, sending its threads into the wood. Such a



Photo by W. B. MacDougall.
The fruiting bodies, "sporophores," of a wood-destroying fungus on the trunk of a willow tree. This especial one is called *Daedalea confragosa*.

fungus is a destroyer of wood, an enemy of the wood we may say, which causes it to become weak and brittle and finally to decay. Perhaps it is a "dry rot" fungus which in spite of its name, requires some moisture, and there was no sign of a fruiting body on the outside of the piece of timber when placed in the building. But unknown to the owners, it grew and spread like a sheet all over the wood and the building crumbled in that corner because the wood had no strength or resistance to strains coming on it. Replacement, at great expense, would be the only remedy.

I saw a very interesting and curious example of the work of the "dry rot fungus" (*Merulius lachrymans*) shown by photographs taken by Prof. George D. Clinton, of the Connecticut Agricultural Station, New Haven, Conn. A great sewing machine company found in their store rooms where sewing machine cases had been placed a strange, sheet-like growth spreading over everything which no one could explain. Dr. Clinton was called in and pronounced it the work of the "dry rot fungus." This had been under the floors of the building and had worked up through the outer packing boxes in which the sewing machine cases were contained. The conditions had been moist and warm and the fungus had spread wonderfully. In a short time it might have destroyed thousands of dollars worth of valuable products.

After living in the wood for a while, and destroying its strength, or exhausting the food supply in the wood of the tree, the fungus prepares to reproduce itself. This it does by means of the shelf or "bracket" on the outside of the tree or timber, in which are borne millions of spores which are blown by the wind and as soon as they lodge on damp



Photo by W. B. MacDougall, University of Illinois.

Fruiting body of a wood-destroying fungus (*Hydnum erinaceum*). Notice the teeth on the underside.

wood, start the fungus all over again. This complete circle of existence the botanist calls its "life-history."

In the photograph of the willow tree, you see a number of these "brackets" and you may be certain that it is badly decayed. When the lumberman sees a tree of this kind, or even with one fruiting body, he knows that it is worthless for lumber, since the lumber would have the same rot started in it. Such logs are left in the woods, because they would not pay the expense of getting them to market.

In the second photograph you will see the fruiting body of another fungus on the end of a piece of timber or railroad tie. It is very likely that such a tie would be crushed under the loads passing over it, so that such ties have to be constantly replaced in the track. Such decay might have been prevented, if the wood was sound, by the use of creosote or some other wood preservative.

Directions for Setting Out Trees on School Grounds.

[R. B. MILLER, State Forester.]

(Obtaining trees for setting out in school grounds.)

In getting young trees for setting out great care should be taken in digging them. Trees differ in their root habits, as is evident from a study of seedlings of the various species. All of the nut trees, such as the oaks, walnuts, hickories, etc., have a strong central or "tap root," running straight down, without at first many laterals, or side roots. For this reason it is better to grow these species from seed, planting the seed in the permanent site. However, commercial nurserymen do germinate these species in seed beds and afterwards transplant them into nursery lines in order to develop a more branching root system, even cutting off the main tap root with a sharp axe to cause the formation of laterals, a process called "root pruning." The teacher in digging tap-rooted species in the woods should be careful to dig deeply enough to get all of the root system of the trees, without breaking too much the delicate ultimate roots, or rootlets, which are the absorptive organs of the young tree.

Other trees such as the elm, soft maple, etc., have a superficial root system which adapts them to a shallower soil than the tap-rooted species but for such species there must be a large amount of water in the upper layers of the soil. If the sub-soil, where the planting is done, is hard and impervious to water it may be advisable to explode a stick of dynamite in the hole to loosen it up. It has recently been found that the death of trees in Central Park, New York, was due to the roots striking this hard impenetrable layer of sub-soil and not being able to go further, the roots stopped growth and the trees died after reaching a certain diameter.

Then there are the trees which have an intermediate root system, half way between these two classes mentioned, where the whole root system is more or less heart-shaped, that is, does not go straight downwards or spread out on the surface. The soil should then be studied before planting to see just what species is best suited to it, considering its depth, porosity, and moisture content.

After the trees are dug carefully and are not to be planted for a few days, it is better to "heel them in" in good garden soil, just as you



Planting a Tree.

do apple trees. That is, dig a trench, put the roots of the trees in, with the tops of the trees pointing north and with the feet pack loose, garden soil tightly around the roots, to keep in the moisture.

After the trees are dug in the woods or are sent you from the nursery, *do not allow the roots to dry out for an instant*. You can prevent this by packing them in wet moss, straw or burlap, thoroughly soaking this material until the trees are safely "heeled in," at a point near the school grounds or in the school garden. Most of all, do not allow them to lie on the ground a day or two before planting, as is sometimes done, before the holes are dug for them. Such trees are pretty well dead before they are planted and only with exceptionally wet weather will they come through at all. Yet you see this done in some towns; trees being hauled along the streets and left until the planters get to them. So far as possible, keep some of the soil around the roots (this can be done in wet weather), this kind of planting being called "ball planting." Some nurseries send out the trees in a ball of earth which makes their chances for growing much better, when the entire mass is planted in good soil.

SETTING OUT TREES.

First, dig a pit 4 feet long, 4 feet wide, and $3\frac{1}{2}$ feet in depth. The soil removed can be enriched with manure and fertilizer, and enough top soil added to fill the pit. Where your soil is a poor clay it is best to haul in a cubic yard of good rich garden soil, and fill the hole with this, leaving this to settle for two or three months or weeks at least before planting trees. When all is ready for planting on Arbor Day, a young tree is pruned both top and bottom, all bruised roots being cut off with a sharp knife. The pruning of both roots and top is done so as to bring into equilibrium the root system and the crown (or top) of the tree. With a large top and diminished root system the tree would "transpire" or give off through the leaves more water than could be taken up by the roots, producing wilting and even death if the condition

continued. Be careful all of this time to *keep the roots moist*. If necessary, after bringing in the trees from where "heeled in," put them in a tub of water and mud mixed together, a process called "puddling." This will surely keep your trees in good condition. Scoop out a pit in the center of the loose earth large enough to take in all of the root



Arbor Day Exercises on Morton High School Grounds.

system and seeing that the tree is straight, throw in loose earth around the roots very carefully, packing it with the feet. This avoids air spaces and puts the roots in contact with the soil, conserving moisture. The tree is placed to about the same depth as it stood in the woods or nursery row—some planters say two or three inches lower. The ground might be left a little lower around the base of the tree to provide for mulching, which will be explained later.

CARE OF TREES.

The tree is planted, but this does not guarantee that it will grow. It will need a certain amount of care and attention, that is it will need watering, mulching, trimming, spraying, etc., and will need to be protected against the teeth of horses and other animals. If watered, the work should be done thoroughly, several bucketfuls carried and not only put where the roots are but out some distance from the tree. Holes may be sunk in the earth with a crow-bar and water put into these holes. A good soaking with a garden hose is a good thing, if you have one, washing off the leaves and the trunk occasionally.

MULCHING.

A mulch is a layer of loose earth or decayed leaves or straw placed at the base of a tree to hold in the moisture, protect the roots from winter injury, to keep the soil mellow and friable and also to provide, by its decay, a certain amount of plant food. The conserving of moisture is one of the most important functions of the mulch, especially in very dry weather, and cultivation or stirring up the soil around the tree, then replacing the mulch, helps very much. The mulch also soaks up the water so that it does not run off, which is important.

TRIMMING.

Trimming need not concern the planter much in the early life of the tree, the main thing being to let it take its natural shape or habit.



Growing up with the Trees.

If lower limbs need to be pruned off, they should be cut close to the trunk or main limb, with a very sharp knife or chisel and the wound coated with a mixture of coal tar and creosote. For coating wounds on large trees after trimming, a mixture of three-fourths coal tar and one-fourth creosote is good and prevents the entrance of the spores of fungi which cause decay of trees, or "wound parasites."

SPRAYING.

The subject of spraying in connection with insect pests had better be taken up with the State Entomologist and we advise that you write for Circular 1, Entomological Series, "The More Important Insecticides and Repellents," State Natural History Survey, Urbana, Illinois. In this circular most of the insects attacking shade trees are thoroughly covered.

TREE GUARDS.

One very essential thing, especially in unprotected school grounds, is to protect the tree against gnawing and rubbing by horses. To do this, a tree guard is necessary and this need not be expensive. A piece of galvanized netting with a one-half-inch mesh should be purchased and fastened around the tree by means of a stout stake of durable wood, stapling the wire screen to the stake. At the top of the screen, which should be six feet in height at least, chafing of the tree can be prevented by using two short pieces of rubber or old garden hose, putting wire through the center of each piece and crossing them with the tree in between them. This stake is also very important in holding the tree straight in its early growth and preventing its being swayed back and forth by the wind, which is apt to loosen the earth around the roots.

This may seem like a small matter but it is foolish to go to the expense of planting trees and then leave them unprotected against horses or cattle. A wound made by a horse makes efforts to heal over and often leaves an unsightly swelling on the trunk. More than this, a cavity is formed which allows the spores of fungi to germinate, in which the

wood decays more deeply if not covered with creosote, even leading to the weakening and final breaking off of the tree at that point. All because a tree guard was not provided as soon as the tree was planted. These are only a few of the points to be observed in the planting of trees on school grounds. Further information may be obtained on trimming, and the general care of shade trees by writing the State Forester, Room 223, Natural History Survey, Urbana, Illinois.

The Structure of Wood.

(Conifers or "Softwoods.")

Few students know perhaps the beauty of a piece of wood under the microscope, so I am going to try to tell you, in very simple language, some of the wonders which the microscope reveals. For the study we use very thin sections, which may be stained or unstained, mounted on slips of glass and so transparent that the light can be thrown up through them with the mirror. Even with a thin section from the end of a piece of wood made with a plane and studied with a small hand lens, or burning glass, you can learn much about the difference in appearance of wood. But the sections we have used are very much thinner and have been magnified at least fifty times or more, so that they will show many structures which remain hidden when viewed only with a small lens.

First, let us take a wood like a pine, a spruce, or cedar, which the botanist calls a "softwood." In general, we can say that when a tree bears cones, its wood is a "softwood" or coniferous wood. It is very much more alike in structure throughout than a "hardwood," or a wood of deciduous trees, those trees which shed the leaves in the fall.

If you examine a piece of pine you will see heavier and lighter bands of wood, the heavier being called "summer wood" and the lighter bands the "spring wood," both of these making up the growth of one year. It is these lines which we count in telling the age of a pine tree. If we take the summer wood, we will find that it is made up of cross-sections of small tubes which are running up and down the tree, that is in a lengthwise direction. Those formed in summer are for some reason very thick walled while those formed in spring are larger in cross section and thin walled. On the side walls, and on the end walls sometimes when cut through, you will see curious little circles called "bordered pits," that is a small circle with a border around it. It is these long fibers, fitting closely together in the summer wood which give it great strength and resist being torn apart. In spruce they may be torn apart by cooking for seven or eight hours in a lye of some kind, after which they will separate and can be pressed together in sheets called "pulp," which goes into the manufacture of paper. A good deal of our paper, unless made out of rags, is made out of pulp, manufactured by chemical or mechanical processes.

Running across the tree, from center to outside you will see narrow plates in the pine, made up of long cells like bricks placed end to end, called the "pith rays." In the early stages of the growth of the tree, they connected with the pith or center of the tree, hence the name "pith rays." They carry food material across the stem, while the long cylin-

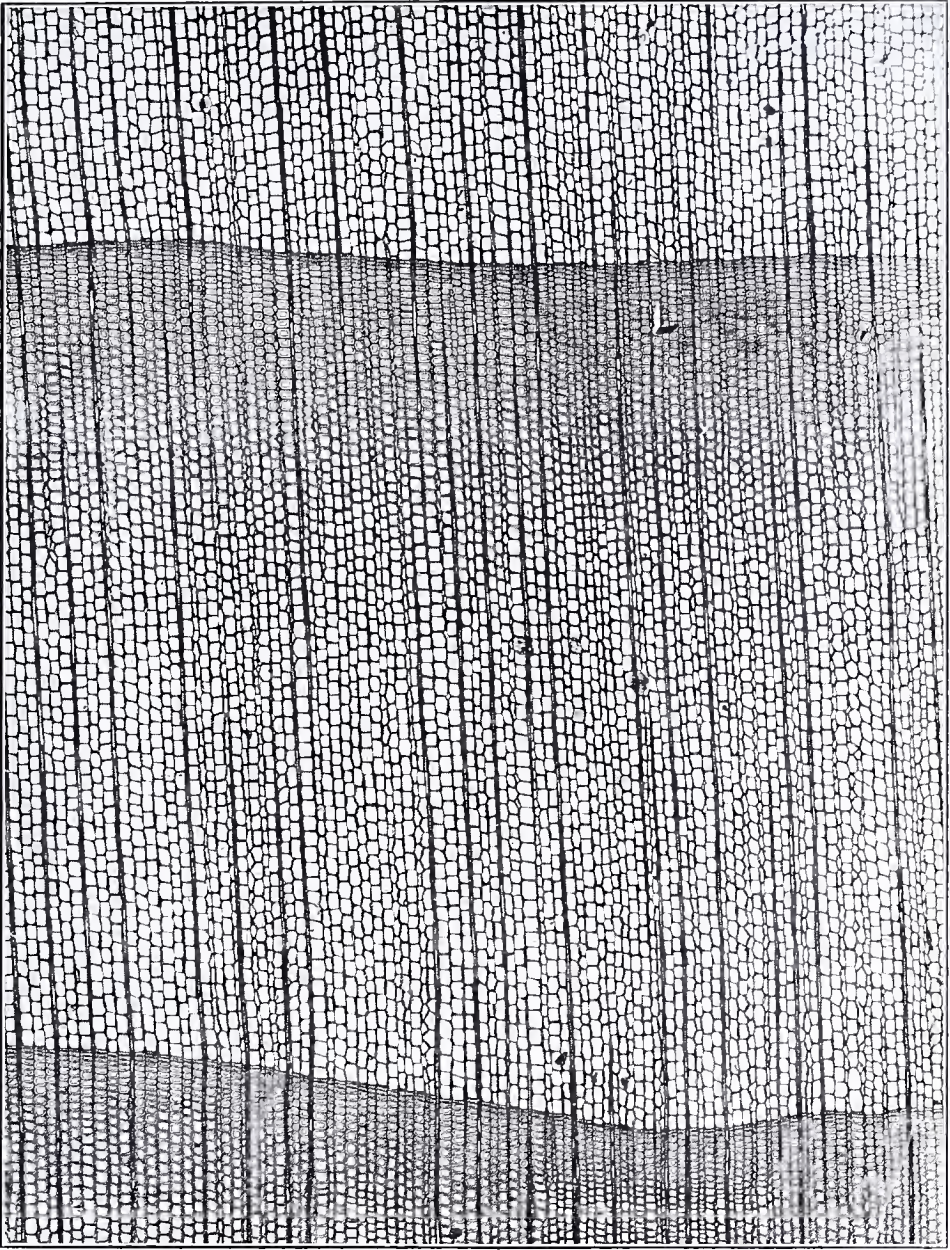


Photo by Woods Products Laboratory, Madison, Wisconsin.

Figure 1.

Cross section of eastern hemlock, magnified about fifty times. Notice the dark bands of summer wood, two of which are shown crossing the section. The darker stripes running up and down are the pith rays.

drical elements I mentioned before appearing as circles in cross section, carry materials up the stem and to the leaves.

You will also find larger holes in the pine wood called "resin ducts" which look like ragged holes and may be filled or plugged up with a sticky substance called resin which these ducts carry. In the southern pines, when the wood is injured it is these ducts which pour out the

resin, from which turpentine is obtained, and also rosin. The southern states, along the Atlantic Ocean and the gulf of Mexico, lead in the production of turpentine and rosin, Savanna being one of the cities handling great quantities of these products, as well as cotton.

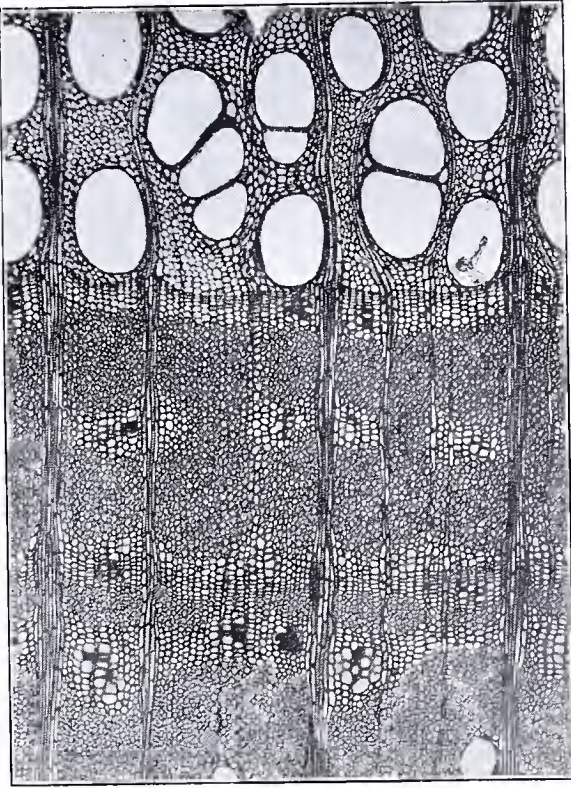
Some of the cone bearing trees have a denser and darker center, called the "heartwood" and a lighter outside portion called the "sapwood." The first is usually more durable when used in the soil, and weighs more to the cubic foot. So, large portions of heartwood make a timber stronger and better than where too much of it consists of sapwood. In some species, as in the firs, there is no distinction between heartwood and sapwood, the color being about the same throughout. Neither do all of the conifers have resin ducts, like the pines. A good many of the "softwoods" have a very pleasant smell, such as white pine, whittle easily and are very good woods for building purposes. They also furnish us with turpentine and rosin, as we have mentioned, paper pulp, mine props, railroad ties, and wood for moth-proof chests, pencils, etc. Altogether, they are a very valuable class of woods and to keep up the supply, in New England, people are planting much white pine, which is the best wood also for box boards. Conifers can usually be told by their conical shape, the fact that they have needles in place of leaves, bear cones in which are the seeds, and have light, even grained wood. Figure 1 shows you the appearance of eastern hemlock magnified fifty times, which is without resin ducts but has most of the other structures I have mentioned.

Hardwoods.

(Trees with deciduous leaves.)

To explain the structure of the hardwoods, we will take a cross section of the honey locust, the tree which has great thorns upon the trunk and which you may be accustomed to call "the thorn tree." This bears long pods, containing bean like, very hard seeds, and in fact is related to the beans and peas, of the great pulse family. It is a hard, rather durable wood, and will show quite a different structure from the pine.

The first thing you will notice, at the top of the picture (Figure 2) is the row of large holes, which are the cross sections of pores or vessels. For this reason, on account of the very great contrast in these holes and those in the summer wood, this wood may be called a "ring porous" wood. You can see that such a wide row of holes as this would not give much strength, although the vessels (or pores in cross section) are excellent passageways or tunnels running up the tree to carry sap to the leaves. The stripes, running up through the wood, and curving past the big spring pores are again called pith rays, as in the pine, but of different structure. The dark wood below is the summer wood and you can see that it is made up of blacker portions, the very thick walled wood fibres, and smaller bands of pores or vessels which are called "summer pores." It is the abundance of this heavy tissue which gives the wood its strength and value. The line between spring and summer wood is just below the lowest of the big holes in the spring wood, which



Photograph by Wood Products Laboratory, Madison, Wisconsin.

Figure 2—Wood structure. (A “ring porous” hardwood.)

Cross section of a piece of Honey Locust, magnified fifty times. Notice the large holes (spring pores) in the upper part of section, the lines of some width (pith rays) running up and down at intervals, and the dense wood fibres and network of summer pores. Upper part is spring wood, lower part of section summer wood.

you can see by looking closely, being made up of flattened cells. To get the age of an oak, for instance, we can count the number of rows of big holes or spring pores, this giving us roughly its age. You can try this on a big stump in the school yard some day, and also see the pith rays running across the stump from center to outside. There are as many as five or six different kinds of cells in the honey locust, just as in the oak, which could be made out if the wood were separated out into its fibres by cooking it with a piece of potassium chlorate and hydrochloric acid for about 15 minutes, over a slow flame. Be careful not to breathe the fumes, which are chlorine gas. These fibres might also be used for pulp, when separated in this way, and in fact they are cooked to make paper pulp from hardwoods, like the poplar. You would find the study of these different parts very interesting under the microscope, and you would find vessels, fibers, long rectangular cells, and several others. If you had a compound microscope in your high school this would make a most interesting study. The hardwoods are so complex and their looks so different that it requires a long time to become familiar with the looks of all of them, but with a hand lens and a sharp knife you will see great differences and might even learn to tell them apart, with a little study.

THE MAY QUEEN.

[By R. A. WIDDOWSON.]

Oh! May is the Madcap Spirit of Spring,
That flits through the world like a bird on the wing;
Her smile is delight, her laughter a song,
And the woods turn to life as she carols along.
On her lovely young brow are the thorn blossoms twined
And her sun-tinted tresses are kissed by the wind.
The flowers bloom forth at her rapturous cry
And the whispering trees wave her past with a sigh.
The snowdrop peeps forth from his dark, wintry bed,
While the violet raises her purple crowned head;
The flame of the crocus gives light to the day
And the daisies and buttercups 'round her path play.
The arbutus, proud in its newly found birth,
With its soft, blushing petals would cover the earth;
While Jack-in-the-Pulpit gives May a sly wink,
For he's more of a lover than cold mortals think.
The columbine hides in a forest of ferns,
With the silver-belled lily, whose tender heart yearns
For a scar-battled lover, like ladies of old,
Whose hearts only bled for the brave and the bold.
Here's cowslips, here's primrose, here's harebell and lily;
Here's jonquil, here's iris and daffy-down-dilly;
Here's ivy, here's jasmine and tender woodbine,
And here's May's sweetest of gifts—Eglantine.
Like a shower of gold on a carpet of green
Are the dents-des-lions in the meadowland seen.
Where the flocks seek the shade by the stream on the lea
And the crimson-torched clover sets honeyed sweet free.
May scatters her treasures, she weaves all her spells,
In the brakes, in the tarns, in the glades, in the dells.
She tells to the brook all her wonderful tales,
And he babbles them o'er to the birds in the vales.
He knows where the willows bend over the stream,
With its mosses, its rushes, its cloud-painted gleam—
Where Daphne has plunged in the waters so cool,



Health and Happiness.

With her charms all revealed in the quivering pool.
 Not a tree but is flashing its emerald hues,
 Scarce a bush without blossom, a bud without dew.
 Leaves bury the branches, blooms burst in the air,
 There's naught with Spring's wonders can ever compare.

Blossoms, blossoms on the trees,
 Blossoms, blossoms in the breeze,
 Hawthorne, apple, peach and pear,
 Blossoms, blossoms everywhere.

In a song full of magic, the Queen of the Flowers
 Calls forth to her festal the light, dancing hours.
 They whisper, they warble, they carol and trill,
 And the plummy-winged songsters respond to the thrill.
 And as flash lovely gems in a bright, golden light,
 The birds tint the air in the maze of their flight
 With sapphire and ruby, with emerald and gold,
 And the loveliest sprite is the humming bird bold.
 The linnet, the warbler, the lark and the thrush
 To the chant add their notes in a full-throated gush
 Of praise for the Heaven of life in a world
 Aflame with sweet beauty, its secrets unfurled.
 And May leads the dancers in many a round
 By the side of the fount, on the moss-covered ground,
 And they scatter their garlands and kisses amain
 While Pan plays his pipes in a love-burning strain.
 Till a sun shower is charmed from the blue of the skies
 To bejewel the woods, while the thirsty buds rise
 And catch with their petals the pattering rain
 And drink of the nectar till drinking is pain.
 And here, my own darling, I'm kissing the flower,
 Whose sweets breathe of thee in this elf-haunted bower,
 The low-branched, the wide-eyed, blue blossoms I sought,
 That whisper Love's dearest wish, "Forget-me-not."

PLANTING A TREE.

What does he plant who plants a tree?
 A scion full of potency;
 He plants his faith, a prophecy
 Of bloom and fruitfulness to be;
 He plants a shade where robins sing,
 Where orioles their nestlings swing:
 A Burning Bush—a miracle!
 Who plants a tree,—he doeth well!
 What does he plant who plants a tree?
 He makes a strong mast for the sea;
 He makes the earth productive, fair;
 He helps the vines climb high in air.
 And from their censers shed perfume
 To sweeten Night and bless high Noon.
 Against the vandals who despoil
 He sets his protest in the soil.
 What does he plant who plants a tree?
 An emblem of the Men to be:
 Who lightly touch terrestrial clay,
 But far above the earth, away
 From sordid things and base,
 Incarnate ideals for their race,—
 Who plants a tree, he doeth well,—
 Performs with God, a miracle!

—*American Forestry Association.*

GOVERNOR LOWDEN ENDORSES TREE PLANTING.

The importance of wood as building material and the necessity for conservation of trees is recognized by Governor Frank O. Lowden of Illinois as paramount issues in the economic life of the country. He has often urged tree planting in the State.

In a recent article in the Chicago Tribune Governor Lowden said:

"I know of no single acre of land in Illinois, even though it be not suited to cultivation, that cannot be made to produce trees successfully. We shall, if we are wise, make laws whereby every acre, which will not produce wheat or corn, will be made to grow trees.

"It may be that we shall be wise enough to exempt these lands from taxation, saying to the owner: 'Plant this little tract to trees and we shall tax you nothing, requiring only that when your children or your grandchildren harvest them they shall pay a fair percentage of the proceeds into the treasury of the State.'

"You would not only set these little acres to work for the profit of both the State and the owner, but the growing forest upon the farm will help to tie the children to the farm."

—*American Forestry*, February, 1919.



Prospectin' for Health and Comfort.

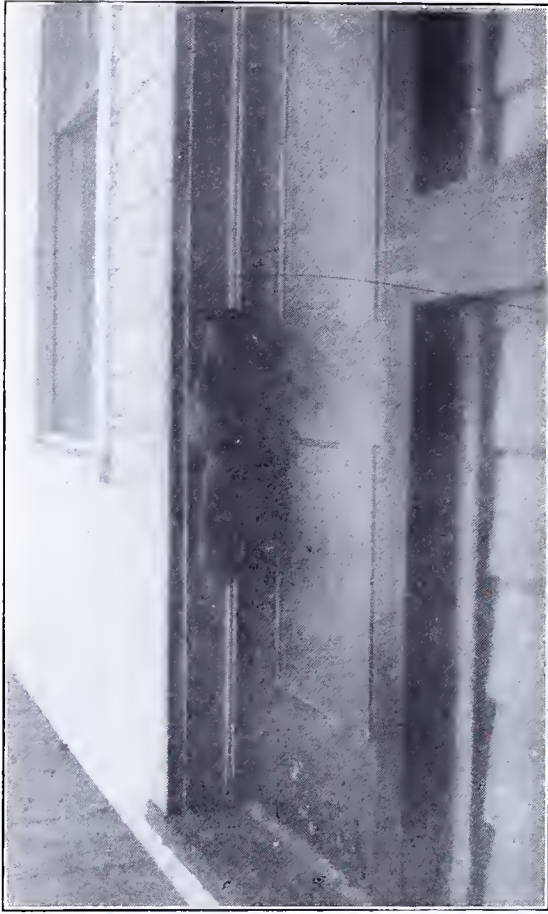
"PROSPECTIN'."

[J. R. SIMMONS.]

Up the mountain and through the burn
We climbed. An' 'mongst the brush and fern
An ole man drove his maudock home,
An' slapped a tree in the gapin' loam.
"Mornin', Father. What's the game?"
"Plantin' trees," the answer came.
"You don't 'spect to live to see
The standin' timber, do ye, say?"
He looked reflectin', down the hill:
"Wal, no. But, thunder, some 'un will."



The photograph of this stump was presented by County Supt. W. C. Heyl of Monroe County. This was a Burr Oak tree which grew in the Prairie du Long Creek bottom and was seven feet in diameter. It was placed in the court house yard at Waterloo in 1902. No doubt the tree was growing when Columbus discovered America.



Rapping at My Door.

THE LITTLE BEGGAR.

[AUGUSTA KERCH DE LHOBBE.]

There is a little squirrel,
Comes begging of my store.
Each day I hear him tapping
And rapping at my door.
He shows he's learned of manners
The very, very best;
As he stands and makes a curtsy,
With hands upon his breast.
So dainty is this beggar
Who's pleading to be fed,
I think it is a pleasure
To share with him my bread.
He bows and scrapes and curtseys
Each day before my door,
And thanks me for my kindness;
Then back he comes for more.



Nature's Sweet Restorer.

THE TREE PLANTER.

[LUCY LARCOM.]

He who plants a tree
 He plants love;
 Tents of coolness spreading out above.
 Heaven and earth help him who plants a tree,
 And his work its own reward shall be.



Indian Mounds—Pecatonica Bottoms, Winnebago County.



An Old Willow Tree.

SHADE.

[THEODOSIA GARRISON.]

The kindest thing God ever made,
 His hand of very healing laid
 Upon a fevered world, is shade.
 His glorious company of trees
 Throw out their mantles, and on these
 The dust-stained wanderer finds ease.
 Green temples, closed against the beat
 Of noontimes' blinding glare and heat,
 Open to any pilgrim's feet.
 The white road blisters in the sun;
 Now half the weary journey done,
 Enter and rest, O weary one!
 And feel the dew of dawn still wet
 Beneath thy feet, and so forget
 The burning highway's ache and fret.
 This is God's hospitality,
 And whoso rests beneath a tree
 Hath cause to thank Him gratefully.

